

## THE DISTRIBUTION AND ETHNOZOOLOGY OF REPTILES OF THE NORTHERN PORTION OF THE EGYPTIAN EASTERN DESERT

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**ABSTRACT.**—In this paper we review the occurrence and distribution of reptiles known from the northern portion of the Egyptian Eastern Desert and the ethnozoology of these animals as viewed by a local Bedouin tribe, the Khushmaan Ma'aza. Particular emphasis is placed on reptile folklore, local names, taxonomy, use as medicine, and natural history as conceived by the Khushmaan; this information is contrasted with Western scientific thought. In most cases these two views are congruent with one another. The major exception is that the Bedouins consider several reptiles venomous which are not known to be so by herpetologists.

**RESUMEN.**—En este trabajo reseñamos la presencia y distribución de los reptiles conocidos de la porción norte del Desierto Egipcio Oriental, y la etnozología de estos animales según son vistos por una tribu local de beduinos, los Khushmaan Ma'aza. Ponemos énfasis particular en el folclor, nombres locales, usos como medicina e historia natural de los reptiles, tal y como son concebidos por los Kushmaan; esta información es contrastada con el pensamiento científico occidental. En la mayoría de los casos las dos visiones son recíprocamente congruentes. La principal excepción es el hecho de que los beduinos consideran venenosos a varios reptiles que no son considerados como tales por los herpetólogos.

**RÉSUMÉ.**—Dans cet article, nous présentons une revue de la répartition géographique des reptiles de la partie septentrionale du désert égyptien oriental, ainsi que l'éthnozologie de ces espèces d'après la perception d'une tribu locale bédouine, la tribu Khushmaan Ma'aza. Nous discutons les aspects du folklore liés aux reptiles, les noms régionaux, la taxinomie, les utilisations médicinales et l'histoire naturelle à travers la perception Khushmaan. Ces informations sont confrontées aux pensées scientifiques occidentales. Dans la plupart des cas, les deux perspectives ne sont pas opposées. La principale exception consiste dans le fait que les Khushmaan croient que certains reptiles sont venimeux, tandis que les herpétologistes réfutent cette croyance.



## INTRODUCTION

By the nature of their unusual locomotion, habits, and life-cycles, snakes and lizards are often the subject of intrigue and a unique folklore. In numerous cases these perceptions exemplify the secretive habits and calamitous mystique of reptiles, including aspects such as disease, poison, death, and the bizarre. Often times the initial basis for these notions and beliefs appears to be some astute knowledge of an animal's habits, rather than the fantastic. Sometimes these natural history observations proceed through a series of cultural permutations that enrich the original information and become the fabric of indigenous environmental knowledge.

Many groups of pastoral nomads of the North African deserts have a rich body of information about the natural world, including the local reptiles. This extensive knowledge reinforces the nearly universal observation by ethnozoologists that various groups of people living in intimate contact with the natural world "know so much" about nature (Berlin 1992). To date only a small fraction of Bedouin ethnozoological knowledge had been researched and published. Other than cursory mention in several works (e.g., Bons 1959), little information on the ethnoherpetology of North African deserts has been published. Corkill (1935a, 1935b) discussed snake stories and snake traps from the Kordofan and Darfur provinces of the Sudan. Marinkelle (1959) reviewed the medicinal and nutritional uses of reptiles and amphibians found in the markets of Tunisia and Libya; he also mentioned some folk stories from the area. The folklore of Sudanese Nilotic people regarding a gecko was discussed by Cottam and Cottam (1923).

In this paper we attempt to narrow the wide gap in the ethnoherpetology of North Africa with the knowledge possessed by the Khushmaan Ma'aza Bedouins of Egypt's Eastern Desert. This presentation opens three subsequent opportunities for analysis herein and in future ethnozoological research. First, by examining Khushmaan nomenclature and perceptions of reptiles it is possible to learn how these people conceptualize some of the living things in their environment (Berlin 1992). This cultural information is important in its own right in filling existing gaps in knowledge about Bedouin peoples, and in allowing for potentially useful cross-cultural comparisons. Second, the environmental context of this cultural information may be quite instructive to Western science, particularly in disclosing the distribution, habitats, and habits of some Egyptian reptiles. Finally, the disparities between Khushmaan and Western scientific knowledge challenge the ethnoscientist with a puzzle: how can a people with such an intimate knowledge of nature be apparently so "wrong" about some major attributes of the animals they know?

## THE KHUSHMAAN

The Khushmaan, a clan of the Ma'aza, is comprised of some 250 households in Egypt, of which about half are based in the Eastern Desert between the Qift-Qusseir road to the south and the El Koriamat-Zafarana road to the north (Fig. 1). These Arabic-speaking tribesmen immigrated to Egypt from northwestern Arabia beginning about 200 years ago. They are primarily pastoral nomads, tending camels, sheep, and goats. There is also a hunting and gathering component of



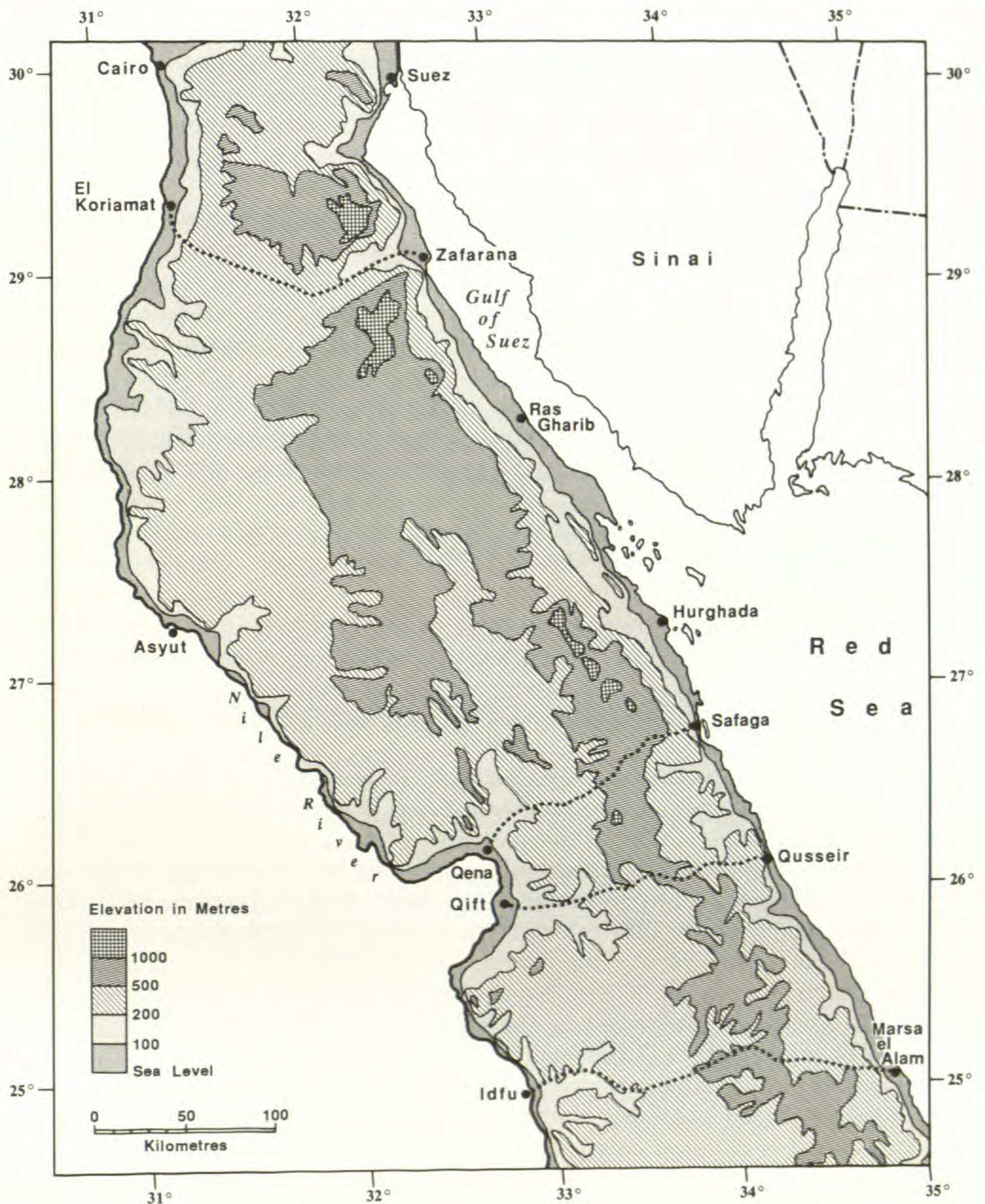


FIG. 1.—Topographical map of the northern portion of the Egyptian Eastern Desert.

their economy. The nomads themselves consume some wild resources, such as the meat of Nubian ibex (*Capra ibex nubiana*), and sell others, including the seeds of *Moringa* trees and foliage of *Artemisia* plants, for cash to market buyers in the Nile Valley (Goodman and Hobbs 1988). The Bedouins also obtain necessary food-stuffs and clothing from sedentary populations (Hobbs 1986, 1989).



The Khushmaan classify all reptiles, with the possible exception of *Uromastyx* (see below) and the little-known marine turtles (which are regarded as fish), in the category *duud*, literally "worm." All *duud* are believed to be egg-layers. Also in this taxonomic category are spiders, centipedes, ants, ticks, caterpillars, snails, beetles, and all other flightless, nonmammalian animals.

Khushmaan folk medicine for snakebite relies principally on the intervention of a *hawī* (feminine, *hawīyya*), a kind of shaman whose only power is an ability to cure snake, spider, and scorpion bites and stings. Only certain persons can become a *hawī* or *hawīyya*. When he or she is an infant, the candidate is visited early in the morning on three successive days by a *hawī* or *hawīyya* who gives them a special drink and bestows his or her powers upon the candidate. The *hawī* or *hawīyya* does not administer medicine to snakebite victims, but rather breathes upon the bite, sometimes applying spittle to it, and recites special incantations. After five or six days, the patient usually recovers. Notably, the *hawī* or *hawīyya* is often supplemented by a "first aid" treatment, either cutting off the flesh around the bitten area with a knife; cauterizing the bite with a red-hot nail; or bleeding the bite by an incision, after blood has been brought to the skin surface by the vacuum action of a cup in which a match has been lit. An elderly Khushmaan man claimed that a piece of flesh from the *rakhaam* (Egyptian vulture, *Neophron percnopterus*) applied to the bite is sometimes an effective treatment.

#### THE REPTILES OF THE NORTHERN EGYPTIAN EASTERN DESERT

Several excellent works have been written on the reptiles of Egypt; however, the majority of these deal almost solely with the fauna of the Nile system (e.g., Anderson 1898; Flower 1933). In the past few decades some of the vast desert areas of Egypt have been surveyed zoologically and our knowledge of the local reptiles has increased many times over (e.g., Marx 1968; Capocaccia 1977). One area of the country where little information on the local reptile fauna is available is the Eastern Desert. Herein we restrict our discussion of this region to the northern portion, from the Nile Valley east to the Gulf of Suez and Red Sea, and from the Cairo-Suez Road south to the Idfu-Mersa el Alam Road (Fig. 1). This region is broader than the Khushmaan Ma'aza territory.

Since 1980 we have been working on joint and independent research projects in remote portions of the Egyptian Eastern Desert, and have made observations and collections of the local fauna and flora. In this paper we summarize data on the reptiles of the northern portion of the Egyptian Eastern Desert, combining our own information with previously collected material housed in museums.

To date, 30 reptile species have been recorded in the northern portion of the Egyptian Eastern Desert. These include: Gekkonidae—*Hemidactylus turcicus*, *Ptyodactylus hasselquistii*, *Stenodactylus stenodactylus*, and *Tropicolotes steudneri*; Agamidae—*Agama agama spinosa*, *Trapelus mutabilis*, *T. savignyi*, *Pseudotrapelus sinaita*, *Uromastyx aegyptius*, and *U. ocellatus*; Lacertidae—*Acanthodactylus boskianus*, *Mesalina guttulata*, *M. rubropunctata*, and *Ophisops elegans*; Varanidae—*Varanus griseus*; Scincidae—*Chalcides ocellatus* and *C. sepsoides*; Colubridae—*Coluber florulentus*, *C. rhodorhachis*, *C. rogersi*, *Lytorhynchus diadema*, *Malpolon moilensis*, *Psammophis schokari*, *P. aegyptius*, and *Spalerosophis diadema*; Elapidae—



*Walterinnesia aegyptia*; and Viperidae—*Cerastes cerastes*, *C. vipera*, *Echis pyramidum*, and *E. coloratus*.

## METHODS

A considerable portion of the information presented here on the distribution of reptiles in the northern Eastern Desert is unpublished. Distributionally important specimen records for species not included in Figs. 2–10 are mentioned in Appendix 1. For documentary purposes we have cited the museum registration numbers of exceptional specimen records<sup>1</sup>.

In order to distinguish the information gathered from the Khushmaan informants from knowledge derived from our own work in the area, we have divided each "species" account into several headings. In most cases the information presented under the heading "Distribution" and always under "Comments" is our own; while that under the balance of headings is strictly from the Khushmaan perspective and should not be viewed in the light of Western scientific thought. Any exceptions to this are explicitly noted.

The systematic order and English common names generally follow Marx (1968) for reptiles, with the exception of the Agamidae which is after Moody (1980), and Täckholm (1974) for plants. The Khushmaan names for plants and their scientific counterparts are based on collections made by JJH in the Eastern Desert and deposited in the Herbarium of the National Research Center, Cairo, where they were kindly identified by Dr. Loutfy Boulos. The system used to transliterate Khushmaan Arabic words is based on Hobbs (1989). The coordinates of Egyptian localities mentioned in the text are presented in Table 1.

## THE REPTILES

### Family Gekkonidae *brays*; gecko

*Distribution.*—Four species of geckos are known to inhabit the northern half of the Egyptian Eastern Desert: *Hemidactylus turcicus* (Turkish gecko), *Ptyodactylus haselquistii* (fan-footed gecko), *Stenodactylus stenodactylus* (elegant gecko), and *Tropicolotes steudneri* (Steudner's gecko) (Fig. 2; Appendix 1). *Ptyodactylus* is the most widely distributed gecko in the Eastern Desert.

*Bedouin taxonomy.*—No distinction seems to be made by the Khushmaan among different types of geckos.

*Folklore.*—The *brays* is poisonous and people die from contact with it. The venom is in the spittle (*riig*) and is contracted from it via the animal's tongue and not by bite. The poison may be spread by the *brays* visiting camps at night and crawling over food utensils or water-carrying vessels. After coming in contact with contaminated objects, the victim generally becomes extremely ill for about a week and then recovers. During that time the victim has no thirst, and may vomit after consuming liquids.



TABLE 1.—Gazetteer of Egyptian localities mentioned in the text.

Locality	Governorate	N. (°)	Lat. (')	E. (°)	Long. (')
Ain Sukhna	Suez	29	35	32	20
Beni Hassan	Minya	27	54	30	51
El Koriamat	Giza	29	18	31	13
Gebel Abul Hassan	Red Sea	26	57	33	21
Gebel Galala el Qibyla	Red Sea	ca.28	50	32	30
Gebel Gharib	Red Sea	28	07	32	54
Gebel Moqattam	Cairo	30	02	31	17
Gebel Qattar	Red Sea	27	05	33	22
Gebel Shayib el Banat	Red Sea	26	59	33	29
Gebel Suez	Suez	29	55	32	20
Hurghada	Red Sea	27	14	33	50
Idfu	Aswan	24	58	32	52
Ismailiya	Ismailiya	30	35	32	16
Katamiya Observatory	Red Sea	29	56	31	49
Mersa el Alam	Red Sea	25	04	34	54
Qift	Qena	26	00	32	49
Qusseir	Red Sea	26	06	34	17
Ras Gharib	Red Sea	28	21	33	06
Ras Zafarana	Red Sea	29	07	32	39
Suez	Suez	29	58	32	33
Umm Diisi	Red Sea	27	03	33	15
Wadi Abu Haadh	Red Sea	28	18	32	48
Wadi at-Tarfa	Red Sea	ca.28	25	30	50
Wadi al-Maniih	Red Sea	25	33	33	37
Wadi al-Radda	Red Sea	27	08	33	20
Wadi Araba	Red Sea	ca.29	07	32	39
Wadi Arkas	Red Sea	28	43	32	01
Wadi Askar	Red Sea	29	01	32	04
Wadi el Asyuti	Asyut	27	10	31	16
Wadi el Nasuri	Suez	30	10	31	29
Wadi Gindali	Suez	29	55	31	40
Wadi Hof	Cairo	29	53	31	18
Wadi Iseili	Suez	30	04	31	55
Wadi Qena	Red Sea	ca.26	12	32	44
Wadi Umm Haadh	Red Sea	26	20	33	23
Wadi Umm Tinaydhab	Red Sea	27	03	33	13
Wadi Umm Yasar	Red Sea	27	03	33	11
Zafarana	Red Sea	29	07	32	39

*Bedouin natural history.*—*Brays* are known to eat *jaru*, the fruits of *lasaf* (*Capparis cartilaginea*). The snake *as-sill al-argat* (*Coluber* sp., see below) is a recognized predator of geckos.

*Comments.*—No species of gecko is venomous. Similar beliefs on the dangerous nature of geckos are held by people residing in the Egyptian and Sudanese Nile



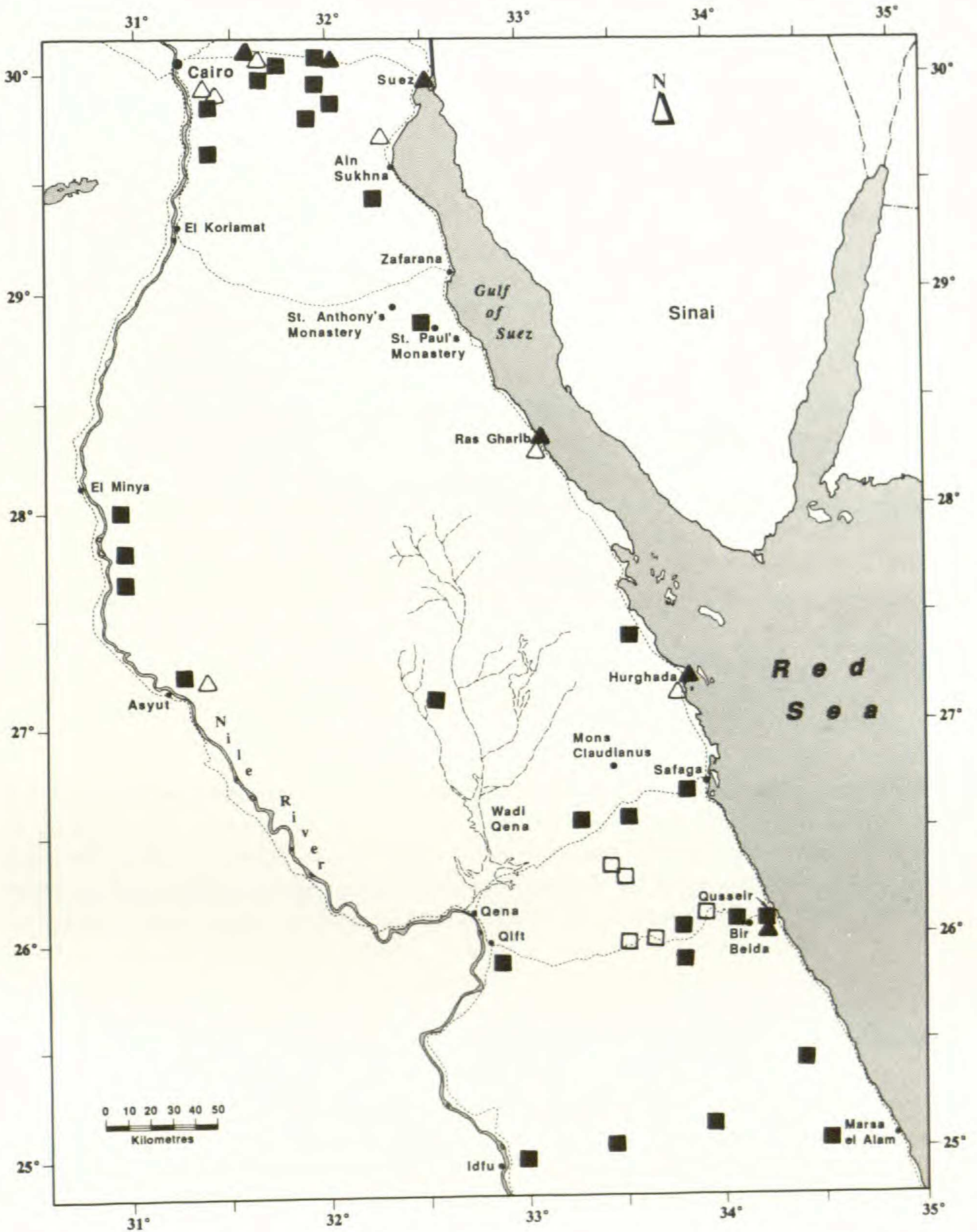


FIG. 2.—The distribution of *brays* in the northern portion of the Egyptian Eastern Desert. Records include *Ptyodactylus hasselquistii* specimens (closed squares) and observations (open squares), *Hemidactylus turcicus* specimens (closed triangles), and *Tropicolotes steudneri* specimens (open triangles).



Valley (Cottam and Cottam 1923; personal observations). It is plausible that geckos occasionally consume *jaru* fruits.

Family Agamidae

*Abu sayha*; *Agama agama spinosa*; Gray's agama

*Distribution*.—This species occurs in both the granitic and limestone mountainous regions of the Eastern Desert (Fig. 3). It occurs at high elevations, e.g., the summit of Gebel Shayib el Banat (2,187 m. above sea level).

*Bedouin etymology and taxonomy*.—The word *sayha*, from which the name of this lizard was derived, means blue in Arabic. The term *abu sayha* is generally used for male *Agama agama spinosa* while the females are often put in the generic agamid category *hibayna* (see next entry).

*Bedouin natural history*.—This animal prefers rocky slopes. In the autumn (not in summer) the male *abu sayha* has red forelegs, like pants; the female is similar but lacks the prominent head spines. Six or seven eggs, very soft (the consistency of the skin on a person's forefinger) are deposited in rocky clefts. It consumes the fruits of *Capparis* sp. and ants (Tregenza 1955). This lizard hibernates during the winter and, in this state, cannot move if picked up.

*hibayna*; Agamidae lizards

*Distribution*.—*Hibayna* is the Khushmaan designation for several species of agamid lizards inhabiting the northern portion of the Eastern Desert (Fig. 4). This term generally denotes *Pseudotrapelus sinaita* (syn. *Agama sinaita*), the Sinai agama, but it is also used for *Trapelus mutabilis* (syn. *Agama pallida* and *A. mutabilis*), the changeable agama; potentially *Trapelus savignyi* (syn. *Agama savignyi*), Savigny's agama; and often female *Agama a. spinosa*, also known as *abu sayha*. *T. savignyi* is known only from the northern edge of the Eastern Desert (Appendix 1). In summary, any agamid other than male *A. a. spinosa* is classified by the Khushmaan as *hibayna*.

*Bedouin natural history*.—*Hibayna* are known to eat *lasaf* fruits. They prefer rocky slopes or wadis with mixed sand and boulders. An important predator on these lizards is the snake *as-sill al-argat* (*Coluber* sp., see below).

*dhabb*; *Uromastyx* spp.

*Distribution*.—*Uromastyx aegyptius* (syn. *U. spinipes*) (Egyptian dabb lizard) and *U. ocellatus* (eyed dabb lizard) inhabit the northern portion of the Eastern Desert and are known by the Khushmaan as *dhabb*. *U. aegyptius* is locally common from the Cairo-Suez road south to Wadi Qena (Fig. 5). It lives in dispersed colonies, generally in sandy or gravelly areas with sparse vegetation. *U. ocellatus* occupies the southern half of the Eastern Desert; most records are from south of the mountainous granitic area west of Hurghada (Fig. 5). This species lives solitarily



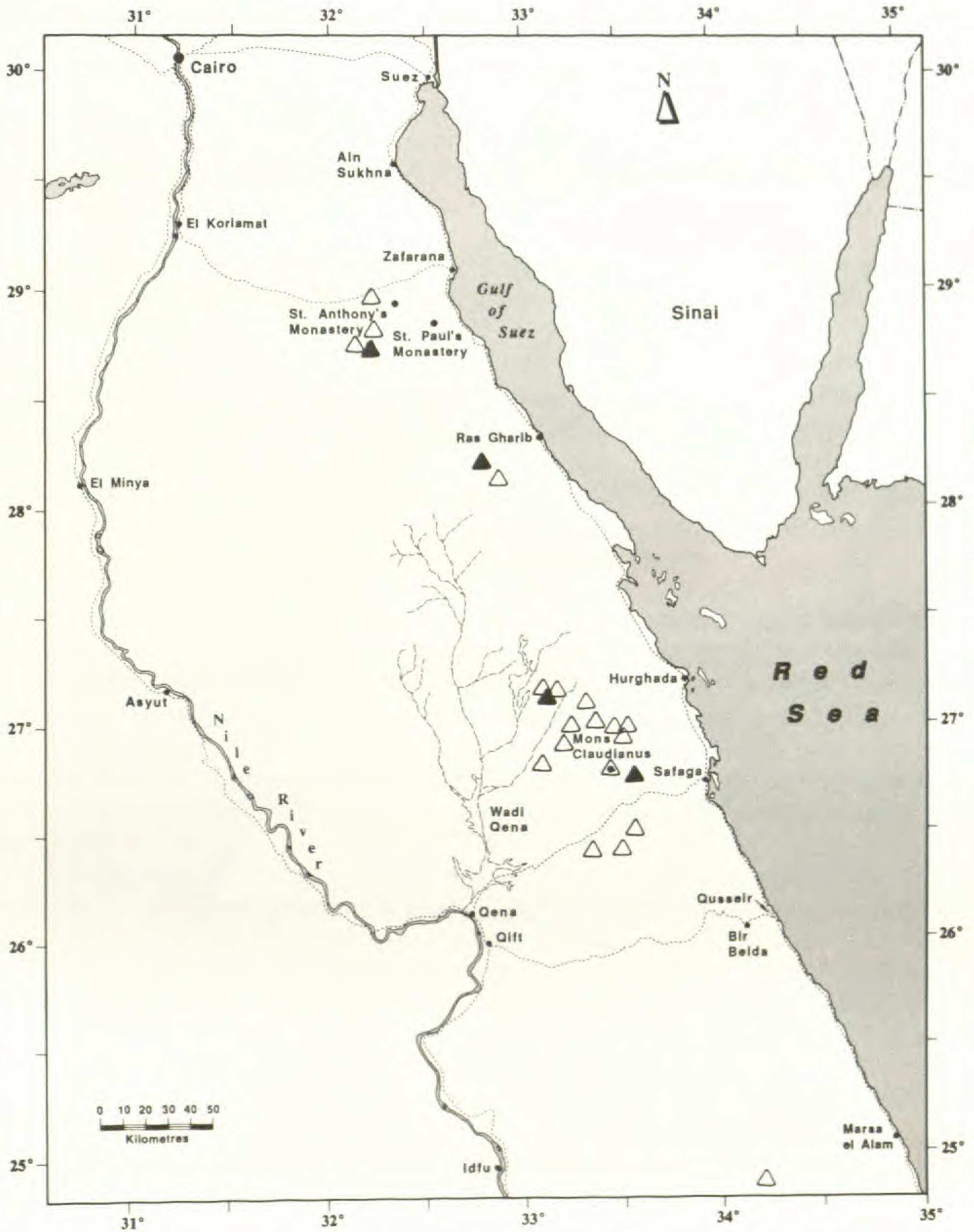


FIG. 3.—The distribution of *abu sayha* in the northern portion of the Egyptian Eastern Desert. Records include *Agama agama spinosa* specimens (closed triangles) and observations (open triangles).



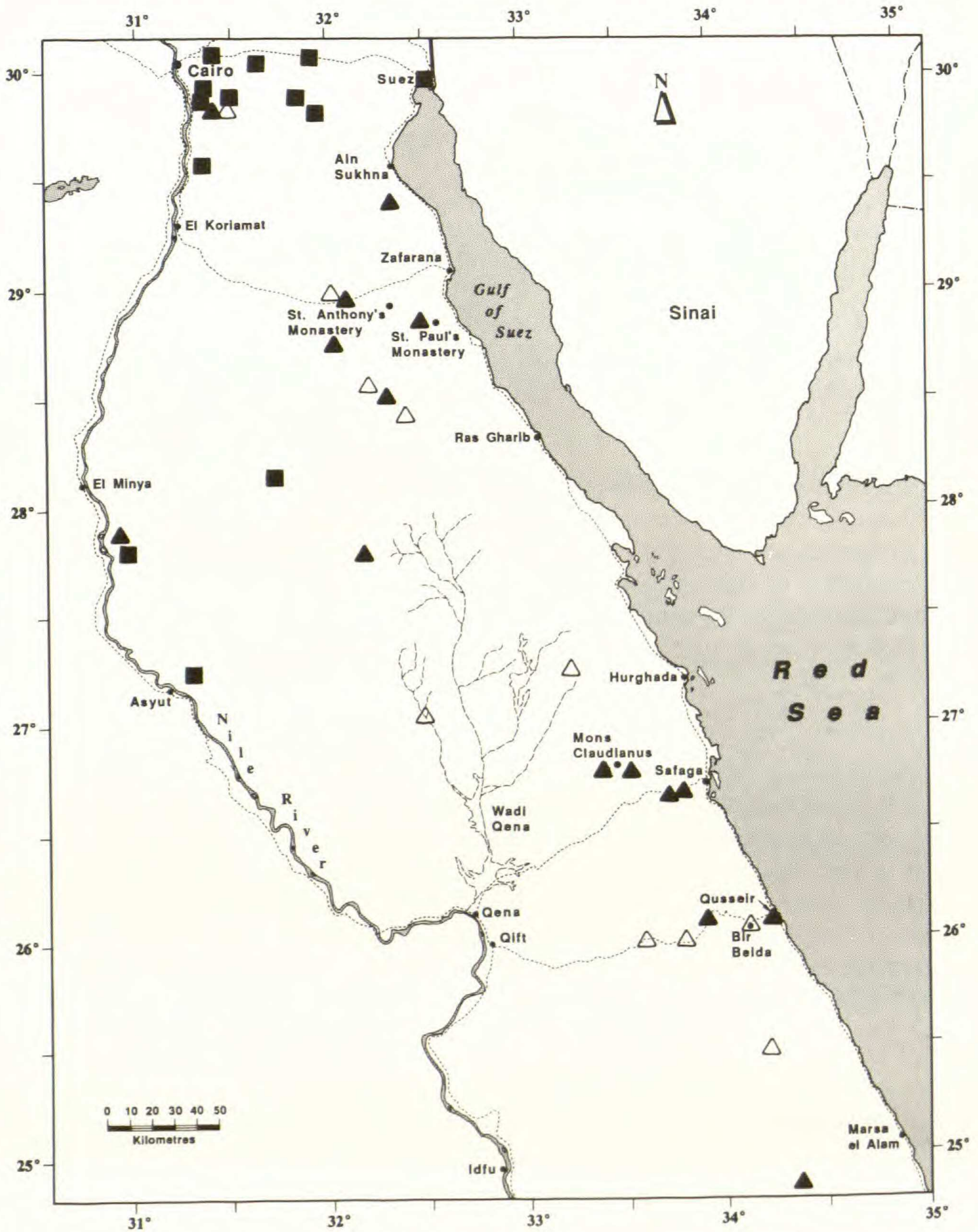


FIG. 4.—The distribution of *hibayna* in the northern portion of the Egyptian Eastern Desert. Records include *Trapelus mutabilis* specimens (closed squares) and *Pseudotrapelus sinaita* specimens (closed triangles) and observations (open triangles).



in rocky or mountainous habitat with relatively dense vegetation. Marx (1968) reported a third species, *U. acanthinurus* (Bell's dabb lizard), from the area; the specimen this record was based on has been examined (FMNH 164664), and it is a young *U. aegyptius*. A specimen obtained at Ismailiya (MHNP 1974.328) is referable to *U. acanthinurus*; however, some of the collecting details are not clear and this specimen should not be used as evidence for the occurrence of this species in the Eastern Desert.

*Bedouin taxonomy.*—No linguistic distinction is made by the Khushmaan between *U. aegyptius* and *U. ocellatus*, although they recognize two types of *dhabb*: the large one (*U. aegyptius*) occurring in the habitat of gravel plains such as Wadi Qena and Wadi Araba, and the smaller one (*U. ocellatus*) in the mountainous regions typified by such locales as Gebel Qattar, Gebel Abul Hassan, Wadi Umm Yasar, and Umm Diisi. Some Khushmaan feel the *dhabb* belongs to the class known as *hayawaan*, the true ruminating animals, because it eats only plants. Others, however, point out that the *dhabb* is an egg-layer, unlike the other animals of the *hayawaan* category. The Khushmaan find significance in the resemblance between the hands of people or *bani adam* and the *dhabb*.

*Folklore.*—Some Khushmaan have eaten the flesh of this lizard, but this is *haraam* (forbidden). When the flesh of the *dhabb* is placed in a fire, it twitches and shakes. Once a Khushmaan threw a rock at a *dhabb*, hitting it on the head. The lizard put its hands to its head, like a person with a headache. The *dhabb* is much respected for saving the Prophet's life. The Prophet Muhammad was fleeing from a person who wanted to kill him. After the Prophet entered a cave, a *dhabb* emerged and with his spine-covered tail erased the Prophet's tracks in the sand, throwing off the pursuer.

*Bedouin natural history.*—The small *dhabb* is particularly fond of eating the flowers and seed pods of *markh* (*Leptadenia pyrotechnica*) and *sayaal* (*Acacia raddiana*). It also consumes *kibaath* (*Launea spinosa*), *'awshiz* (*Lycium shawii*), *hurbith* (*Lotononis platycarpa*), *himaadh* (*Rumex vesicarius*), and *dharagrag* (*Trigonella stellata*). The Khushmaan explain that the resemblance of the *dhabb*'s tail to the *dhanaba dhabb* plant (*Blepharis ciliaris*) accounts for the plant's name, which means "tail of the *dhabb*." The plant *yahmiim dhabbaani* (*Trichodesma africana*), "the *dhabb*'s *yahmiim* plant," is named for the small *dhabb*'s fondness of eating it.

The Khushmaan note that only four animals are active and feed at the hottest part of the day: the *dhabb*, *dhabi* (gazelle, *Gazella dorcas*), *badan* (ibex), and *bill* (camel). The *dhabb* goes into its hole in winter and does not surface for 40 days; there it eats its own dung to stay alive. The small *dhabb* lives under rocks, not in tunnels like its larger counterpart. Predators include *abul-husayn* (fox, *Vulpes* spp.), *ihdayii* and *'ugaab* (assorted hawks and eagles), and *sagr* (falcons). The Khushmaan have observed that if you give chase to a *dhabb* and beat the animal to its hole, it will "surrender" and allow you to pick it up.



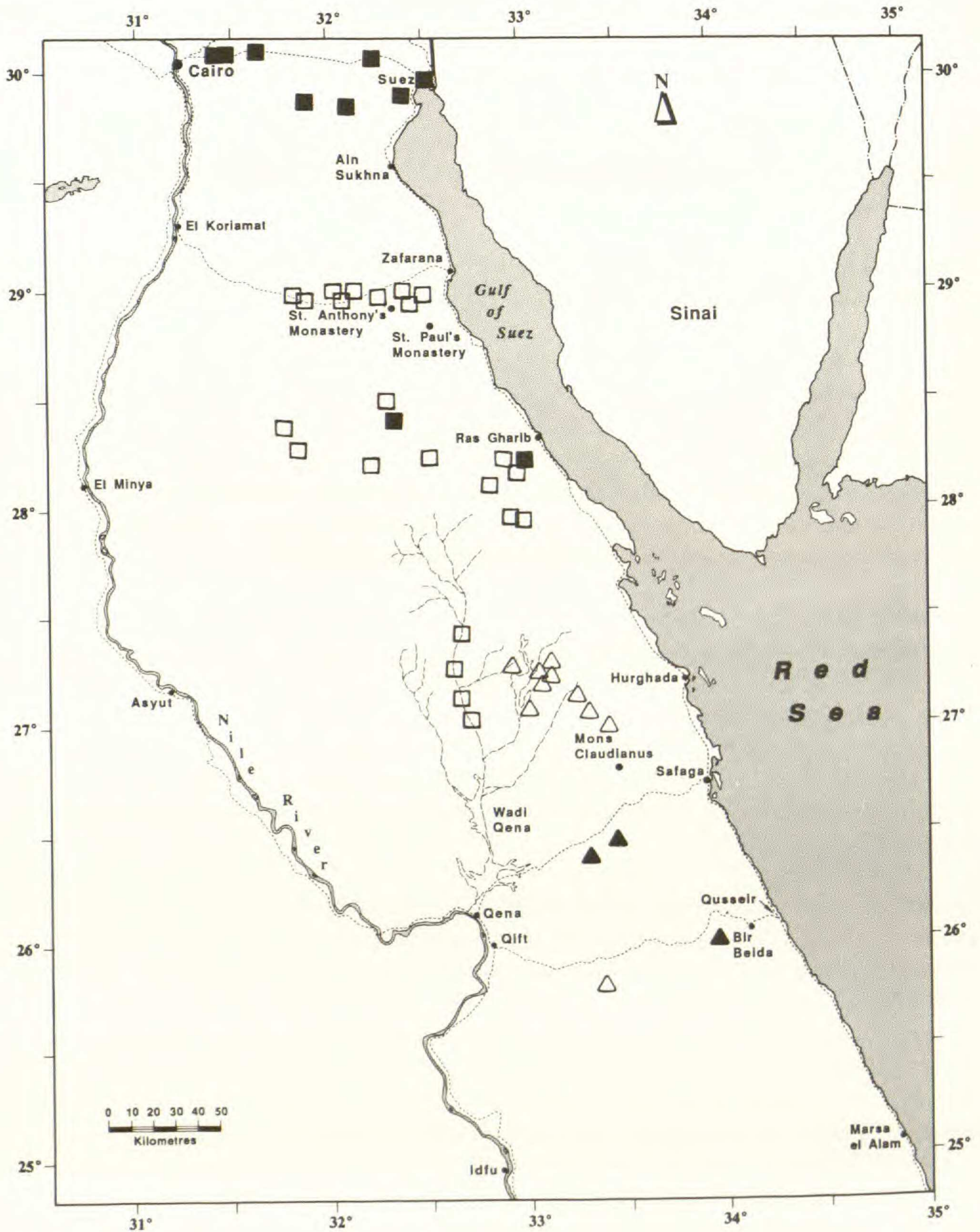


FIG. 5.—The distribution of *dhabb* in the northern portion of the Egyptian Eastern Desert. Records of *Uromastyx aegyptius* include specimens (closed squares) and observations (open squares) and *U. ocellatus* specimens (closed triangles) and observations (open triangles).



## Family Lacertidae

*arabuuna*; lizard

*Distribution.*—Four species of lacertid lizards are known from the Khushmaan territory and all are collectively known as *arabuuna*. These include: *Acanthodactylus boskianus*, Bosc's lizard; *Mesalina guttulata* (syn. *Eremias guttulata*), small-spotted lizard; *Mesalina rubropunctata* (syn. *Eremias rubropunctata*), red-spotted lizard; and *Ophisops elegans*, Ménétries lizard (Fig. 6; Appendix 1).

*Bedouin taxonomy.*—The Khushmaan do not differentiate by name among any of the lacertid lizards living within their territory.

*Folklore.*—*Arabuuna* are respected by the Khushmaan and are not to be harmed. "If a little boy tries to catch it . . . an old man says to him, no, don't kill the lizards, my son; they hold the keys to paradise." The *erebona* [= *arabuuna*] drinks not like *bani adam* and most animals, but with its tongue like a dog (Tregenza 1955).

*Bedouin natural history.*—These lizards tend to live in sandy wadi bottoms with sparse or essentially no vegetation. Known predators include the *as-sill al-argat* snake (*Coluber* sp., see below), the *raahu* (white stork, *Ciconia ciconia*), and the *ghuraab* (brown-necked raven, *Corvus ruficollis*).

## Family Varanidae

*warran* or *waral*; *Varanus griseus*; desert monitor

*Distribution.*—This species is rare and widely dispersed throughout the northern portion of the Eastern Desert (Fig. 7).

*Folklore.*—The *warran* is considered venomous. A Khushmaan informant related how the efficacy against snake bite of a plant called *muliuh* (*Reaumuria hirtella*) was discovered. Long ago, a man saw a battle between the poisonous *aaf* snake (probably a cobra) and the *warran*. The monitor when fatigued and bitten ran periodically to a *muliuh* bush and rubbed itself in it, returning repeatedly to do battle with the *aaf*. The man watching the fight uprooted the plant. The *warran* found the plant missing and could not "recharge," and was quickly dispatched by the snake.

*Bedouin natural history.*—The *warran* is a voracious snake killer and uses its whip-like tail to dispatch prey. It sleeps under trees and does not dig a burrow. When the sun is high and there is no shade, the *warran* seeks shelter in rodent burrows and other holes, where there may be a *hanash* (*Cerastes cerastes*, see below).

*Comments.*—The desert monitor is not venomous. The exceptionally strong and agile tail is used as a whip to stun and sometimes kill prey. The fine, sharp teeth readily cut through flesh. This species is known to excavate burrows (Vernet 1977).



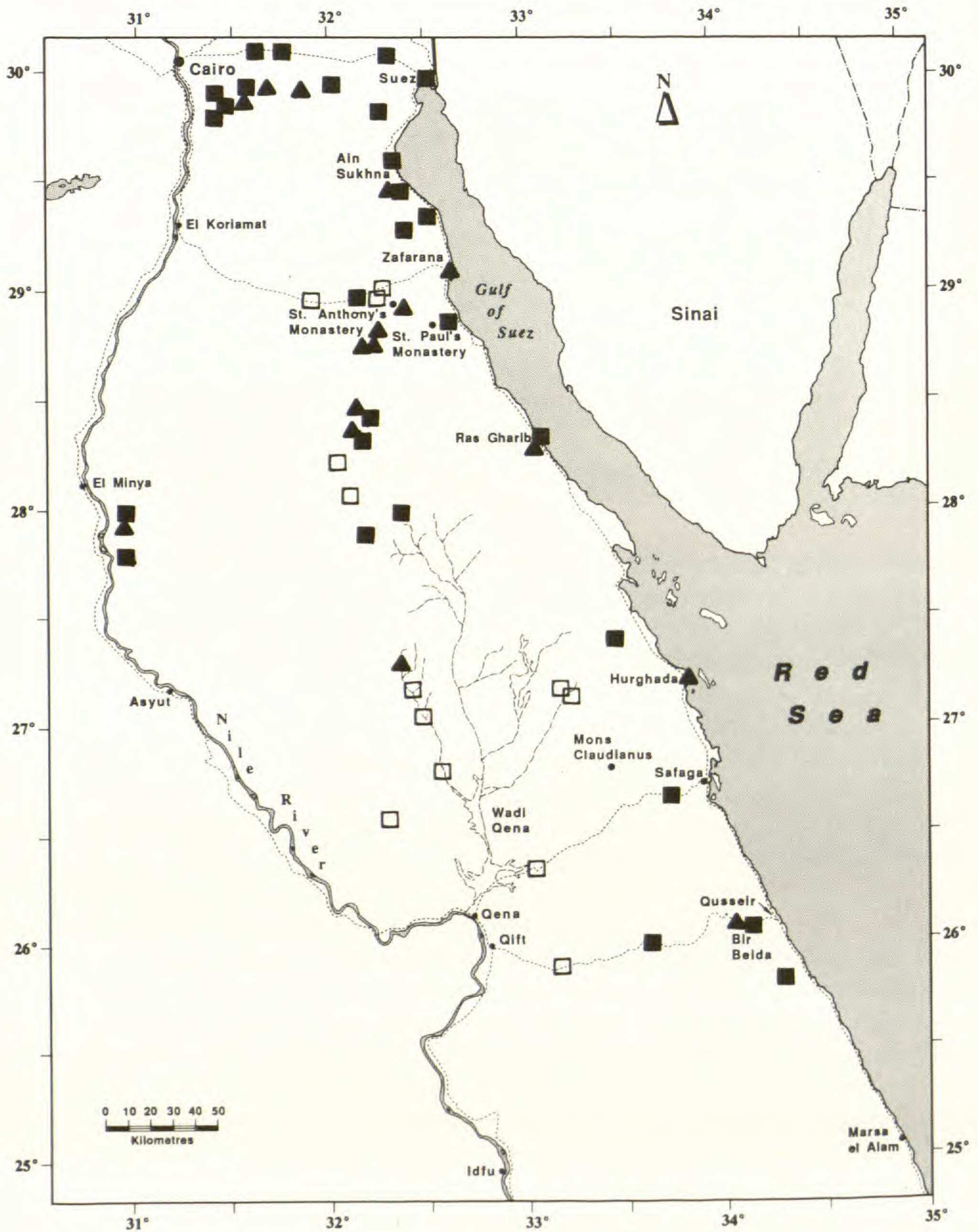


FIG. 6.—The distribution of *arachuuna* in the northern portion of the Egyptian Eastern Desert. Records of *Acanthodactylus boskianus* include specimens (closed squares) and observations (open squares) and *Mesalina guttulata* specimens (closed triangles).



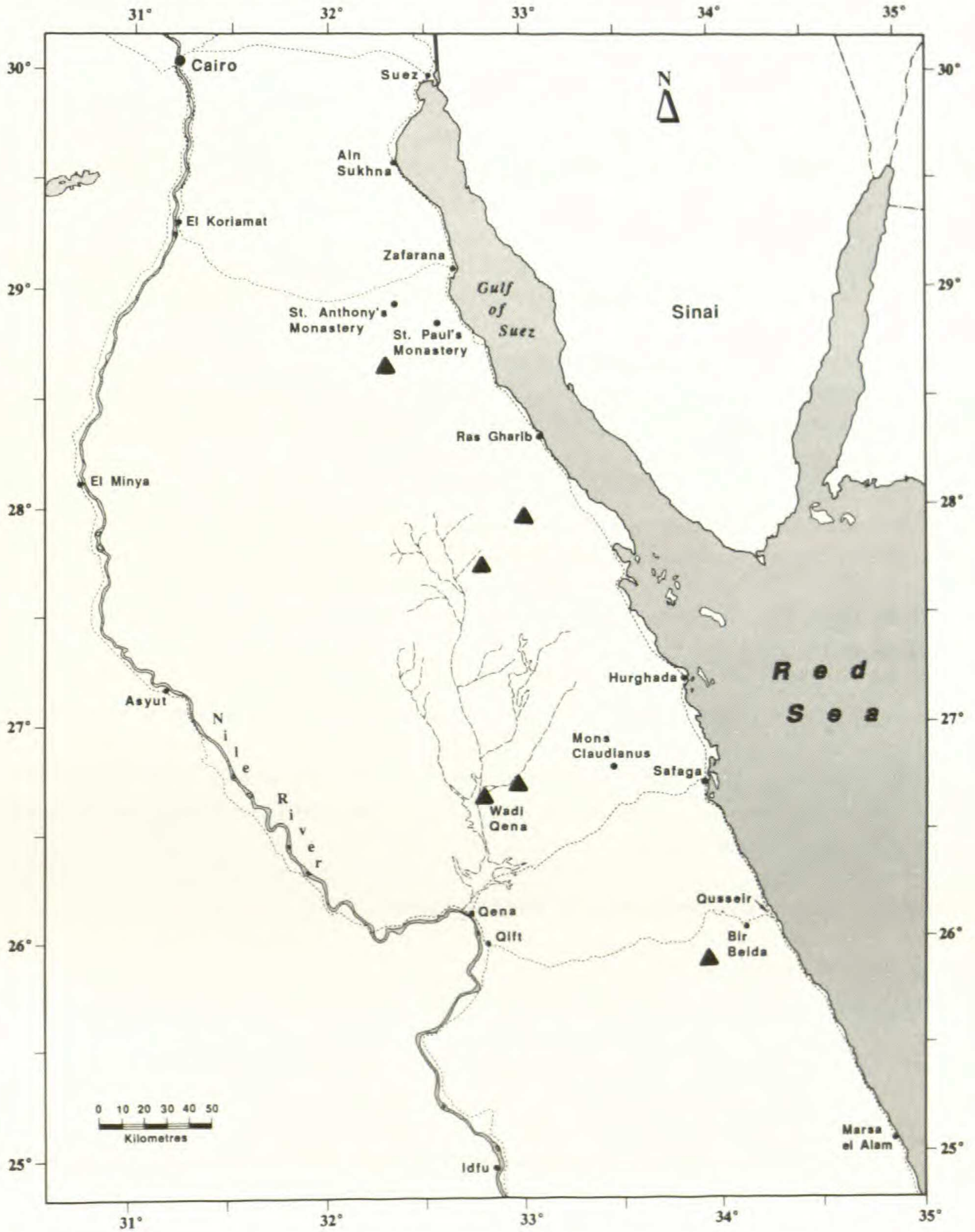


FIG. 7.—The distribution of *warran* in the northern portion of the Egyptian Eastern Desert based on sight observations of *Varanus griseus* (closed triangles).



## Family Scincidae

*mallaja*; *Chalcides* spp.; skinks

*Distribution*.—Two species of scincids are known from the northern portion of the Eastern Desert: *Chalcides ocellatus* (eyed skink) and *C. sepsoides* (Audouin's sand skink) (Appendix 1). Some records from the area may be of accidental introductions by people; skinks regularly turn up in supplies and are occasionally carted between localities, perhaps most often from the Nile Valley to the Eastern Desert. For example, a specimen of *C. ocellatus* found by JJH in camp supplies in Wadi Umm Tinaydhab almost certainly was carried from Wadi al-Radda.

*Bedouin taxonomy*.—No apparent distinction is made by the Khushmaan between these two species. Only *C. ocellatus* was captured in the company of our Bedouin informants. Another lizard, called *lukaaz*, described as similar to the *mallaja* and never observed by us, may well be *C. sepsoides*.

*Folklore*.—The *mallaja* is venomous and responsible for the death of many people, particularly the aged. The virulent spittle (*riig*) is passed via the tongue instead of fangs, in a similar fashion to the *brays*. If a person is "bitten" and then goes into sunlight, they will die immediately; even in the shade the chance of succumbing to the poison is great.

*Bedouin natural history*.—The Khushmaan consider the *mallaja* to be a rare animal in their territory. Many middle-aged Bedouin have never seen this animal. It is known to bury itself in *guff*, the accumulated needle-like leaves of the *yasar* tree (*Moringa peregrina*), or in sand. These skinks have the ability to disappear into and move quickly through sand.

*Comments*.—No skink is known to be poisonous.

## Family Colubridae

*as-sill al-argat* or *sill abraq*; *Coluber* spp.

*Distribution*.—All of our records of this genus from the Khushmaan territory are of *C. rhodorhachis*, Jan's desert racer (Fig. 8). However, specimens and records of *C. florulentus* (flowered snake) and *C. rogersi* (Roger's snake) are known from the northern portion of the Eastern Desert (Appendix 1; Anderson 1898; Flower 1933; Marx 1968).

*Bedouin taxonomy*.—This snake is classified as a type of *aaf* (probably a cobra). Only *C. rhodorhachis* was found by us in the company of our Bedouin companions. Another snake, called *dhaawi*, about 50 cm long, black and white, and with a body shape like *as-sill al-argat*, may well be one or both of the other *Coluber* spp. known from the region.

*Folklore*.—The *as-sill al-argat* is thought to be venomous. No deaths are known, but some bite-victims get sick. An infusion or poultice of the plant *muliih* is good treatment for the bite of this snake.



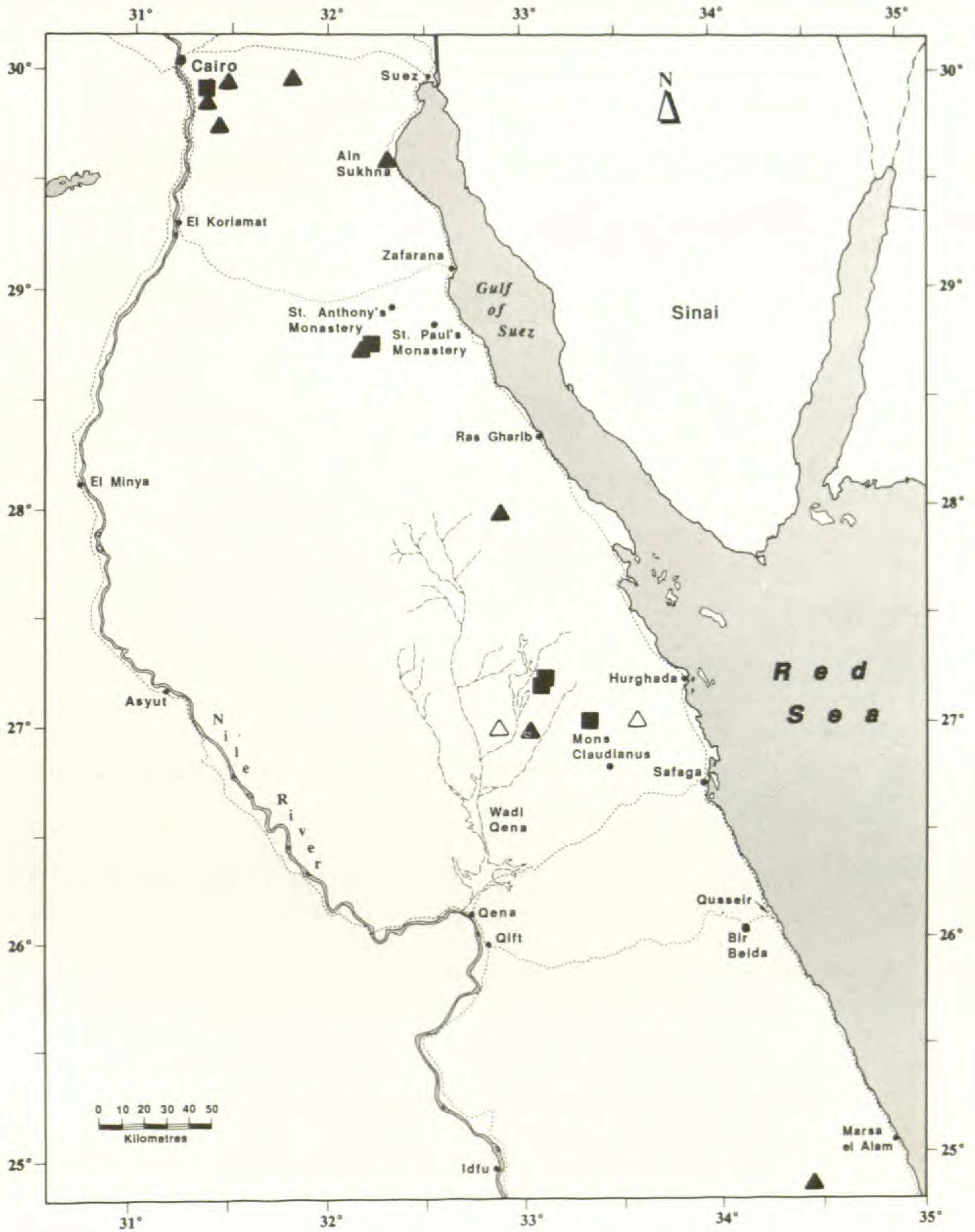


FIG. 8.—The distribution of *as-sill al-argat* and *hidhif* in the northern portion of the Egyptian Eastern Desert. Records include specimens and photographs of *Coluber rhodorhachis* (closed squares), and specimens of *Echis coloratus* (closed triangles) and observations (open triangles).



*Bedouin natural history.*—The *as-sill al-argat* is rare in the area. The snake's locomotion is different from the *hanash* (viper) in that it is not a side-winder but rather leaves an "S-shaped" track. The *as-sill al-argat* eats *brays*, *arabuuna*, small *hibayna*, and small *abu shawk* rodents (*Acomys cahirinus*).

*Comments.*—No *Coluber* spp. is known to have fangs or to be poisonous.

*sill*; *Psammophis* spp.

*Distribution.*—The systematic status of *Psammophis* in the area is unresolved. Marx (1958) described the species *P. aegyptius* (Saharan sand snake) from the Egyptian Western Desert and distinguished it from *P. schokari* (Schokari sand snake) by differences in coloration and scale counts. Since Marx's paper the status of *P. aegyptius* has varied from a subspecies of *P. schokari* to full species status (e.g., Kramer and Schnurrenberger 1963; Marx 1968; Welch 1982). There are areas within Egypt where *P. aegyptius* and *P. schokari* are sympatric (Goodman et al. 1985), and both have been collected in the Egyptian Eastern Desert (Fig. 9).

*Bedouin natural history.*—The *sill* is often found under bushes such as *gurdhy* (*Ochradenus baccutus*), *natash* (*Crotalaria aegyptiaca*), and *markh* where they lie in wait for small birds attracted to the vegetation. They are known to take several types of birds including *kalb is-hayl* (bee-eater, *Merops apiaster*), *fisaysi* (warblers, Family Sylviidae), and *slaygaw* (wheatears, *Oenanthe* spp.). This snake is aggressive and when handled will readily bite people, but is not venomous. It hibernates in winter.

Family Elapidae  
*aaf*; cobra?

*Identification and distribution.*—We have not been able to capture or view any snakes referred to as the *aaf* in the company of our Bedouin informants. The identification of this animal with a single species of snake is problematical, in part because of the variation in the Bedouin's descriptions of its appearance. It is reported by some Khushmaan as being a very long venomous snake, with a hood, and green to beige coloration. It is common in the *riif* (Nile Valley), but not in the desert. A very black *aaf* was once observed by a Bedouin in Wadi al-Maniih. Another Khushmaan description of the *aaf* is that it moves in a straight line like the *sill*, and is whitish grey with white spots (Tregenza 1958).

The only elapid known from the Eastern Desert is the rare *Walterinnesia aegyptia* (Inne's cobra), which occurs in the northern portion of the area (Appendix 1). It is completely black and the record from Wadi al-Maniih may well be of this species. Two other cobras, *Naja naja* (Egyptian cobra) and *N. mossambica* [= *N. nigricollis*] (spitting cobra) are found in the Nile Valley, but to our knowledge have not been documented in the Eastern Desert very far from the valley. One Khushmaan mentioned that the *aaf* lives in the middle elevations (300–600 m above sea-level) of the basement-complex mountains, such as Gebel Qattar.



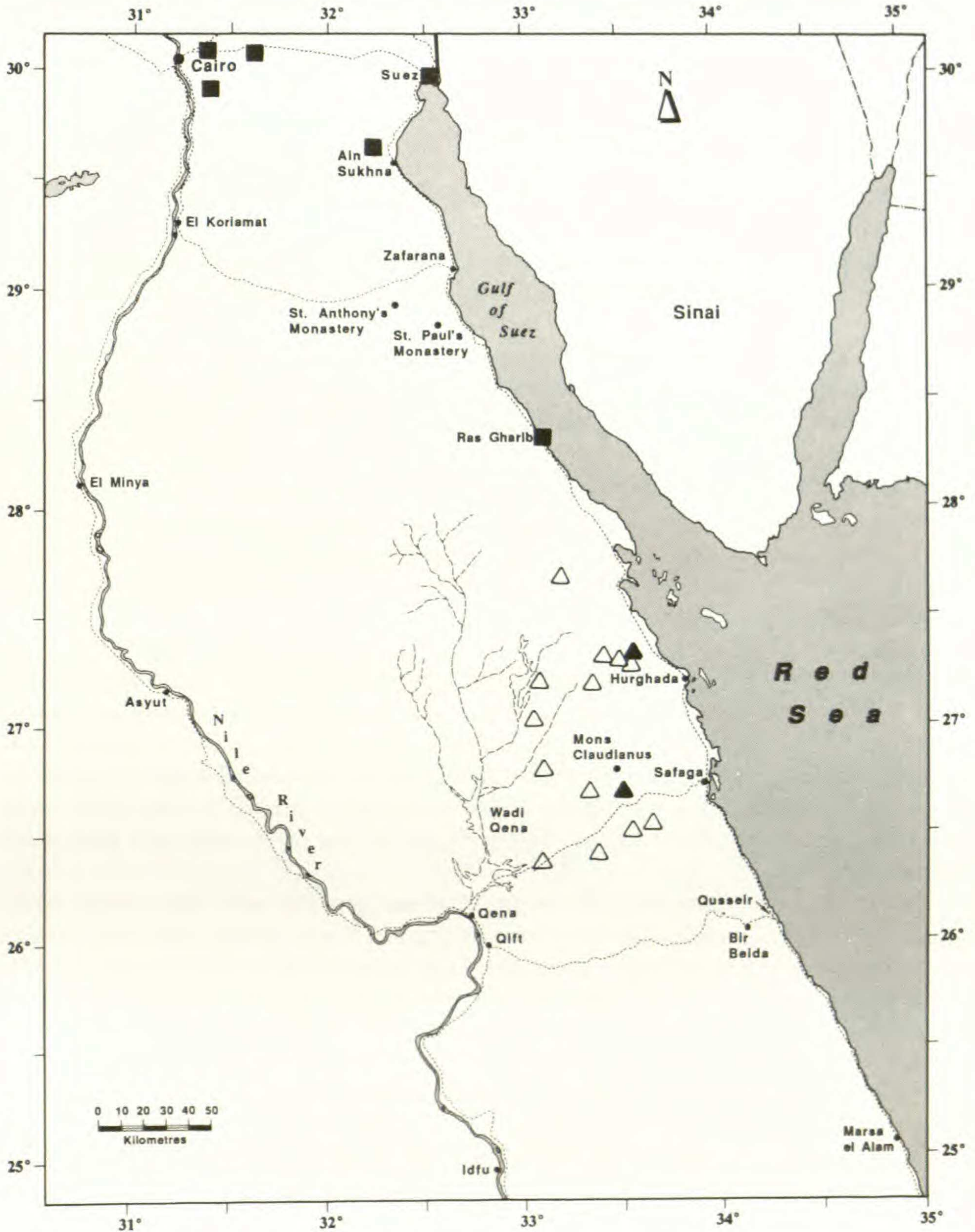


FIG. 9.—The distribution of *sill* in the northern portion of the Egyptian Eastern Desert. Records include specimens of *Psammophis schokari* (closed squares) and *P. aegyptius* (closed triangles) and observations of *Psammophis* spp. (open triangles)



*Folklore.*—In a battle between the *warran* and the *aaf*, people first learned about the medicinal qualities of a plant called *muliuh* (see discussion of *warran*).

Family Viperidae

*hanash*; *Cerastes cerastes*; greater horned viper

*Distribution.*—This species is widely distributed throughout the region (Fig. 10). It tends to occur in sandy wadi bottoms with sparse vegetation. A drainage west of Wadi Qena with a particularly high concentration of *hanash* was named by the Bedouins "*Umm Duud*," "the mother of crawling creatures."

*Folklore.*—The *hanash* is the only animal which the Khushmaan invariably kill when they encounter it. The virulent venom of the *hanash* poses a serious threat to these desert nomads, particularly children. *Hanash* are generally killed by direct blows. If the animal is hidden in a large bush such as *gurdhy*, the vegetation is set ablaze. Dispatched vipers are often buried in the ground, so that if a person or domestic animal steps on the bones they will not be envenomated. The animal's entire body is regarded as toxic. Thus, for example, if an ant has been feeding on the carcass of a viper and then crawls on your food or utensils, you may be indirectly poisoned.

*Bedouin natural history.*—The Khushmaan report that *hanash* come in different color phases and with or without horns. All *hanash* are side-winders. Some Bedouins believe that vipers with horns (*abu guruun*, the "father of horns") are always males. It is reported that the ratio of hornless:horned *hanash* is about 6:1 or 7:1. For example, of seven vipers killed near Gebel Gharib in one week, only one had horns, and of six infant vipers found in one spot, only one possessed horns.

There is some disagreement as to whether the fox eats this snake; some informants stated that fox do not consume vipers, while others said they readily do so. Fresh remains of a viper were found in a fox cache in Wadi Umm Haadh. Dogs (*kalb*) apparently eat *hanash* with no ill effects. The *warran* hunts the *hanash* by swishing its tail in rodent burrows and other holes where the snake resides. When it finds a sleeping viper, the *warran* strikes the snake with its whip-like tail, causing the snake to raise the front portion of the body. The *warran* then bites the snake's head off; it always defeats the *hanash*.

Vipers regularly take *slaygaw* and *fisaysi*. They often hunt for these birds from the ground below or from middle branches of *markh* bushes. When *slaygaw* (particularly the mourning wheatear, *Oenanthe lugens*) spot a viper they hover over it and give a distinctive alarm call. Wheatears performing this action are occasionally taken by the snake. In several cases Bedouin were tipped off about the presence of a *hanash* by the behavior of a *slaygaw*. This snake is also known to eat *abu sayha* (Tregenza 1958).

Vipers are more common in summer than at other times of the year, and become more so after rain, when vegetation cover and rodent populations increase. They are regularly found under *yasar* and *markh*, the latter particularly in the summer. It is thought that during the winter, when vipers are in holes or



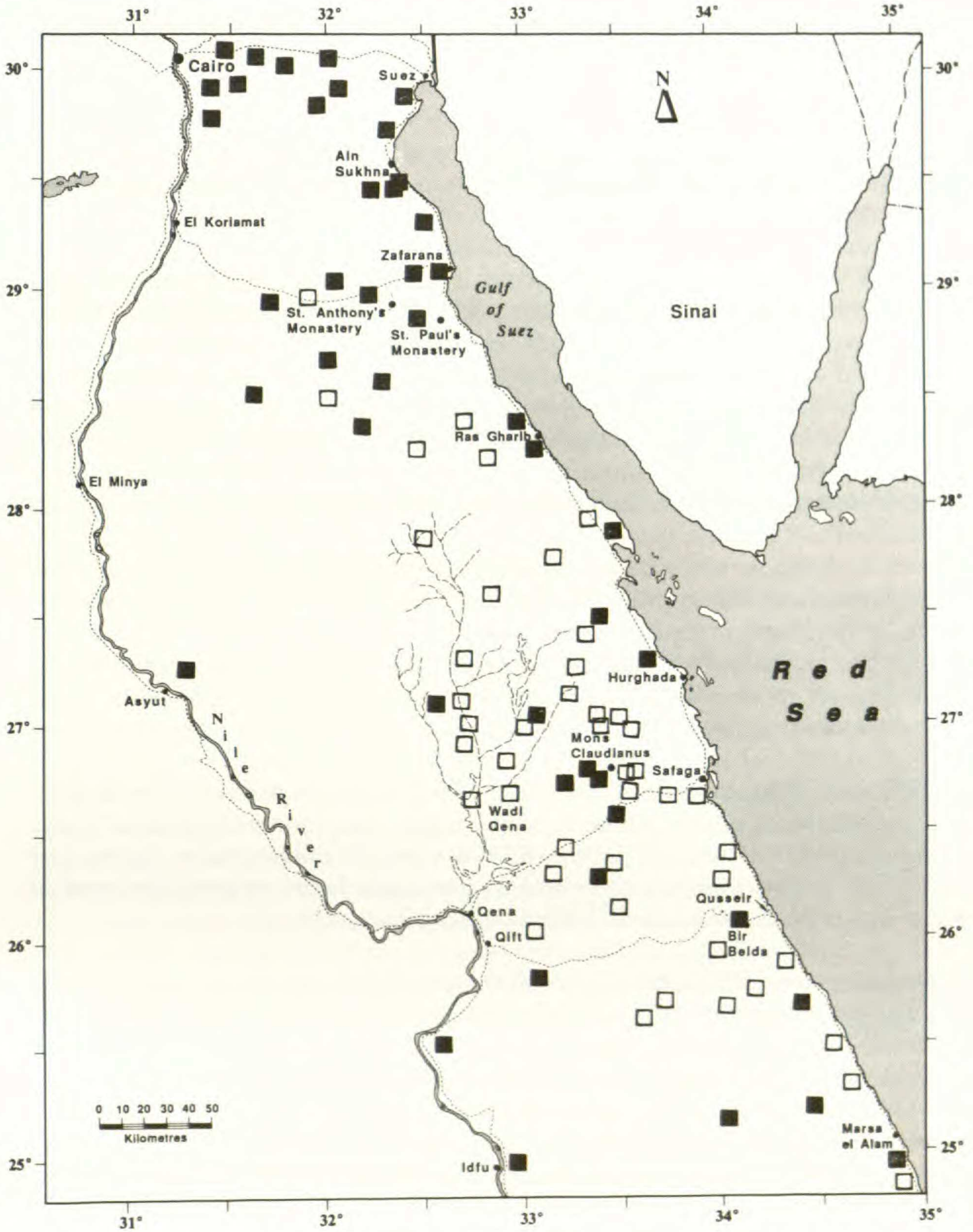


FIG. 10.—The distribution of *hanash* in the northern portion of the Egyptian Eastern Desert. Records of *Cerastes cerastes* include specimens (closed squares) and observations (open squares).



burrows, they eat sand to survive. *Hanash* never drink water. They can often be found in and under *mashta* (*Cleome droserifolia*); a plant known to repel other pests such as ticks. One informant mentioned they had once found eight viper eggs in loose wadi-bottom sand, buried less than one inch below the surface. Infant *hanash*, like the adults, make a characteristic *manaam al-hanash* or viper-sleeping place in the sand. This is a subtle but sure clue to the Bedouins of the viper's presence below the surface.

*Hanash bite*.—There are many vivid accounts of Khushmaan being bitten by this snake, the venom of which is not always fatal. At one discussion of this topic, the Khushmaan recalled 13 or 14 people who were bitten by vipers but survived. Children and elderly persons often succumb to the venom. Most deaths occur three or more days after the bite; often the person appears to be recovering and then dies. In other cases the victim expires almost immediately. There are several cases of people being bitten on different occasions and surviving each instance. Numerous camels have died after being bitten by this snake on the nose or mouth.

There is disagreement about some of the treatments for *hanash* bite. A few Khushmaan believe the application of a poultice of garlic to the bite is useful; more commonly a poultice of the plant *muliuh* is applied to bites on both people and domestic animals. Treatment by a *hawi* or *hawiyya* is always desirable.

*sayda*; *Cerastes vipera*; lesser horned viper

*Distribution*.—*Cerastes vipera* is a rare snake in the northern portion of the Eastern Desert and is apparently confined to sandy wadis and dunes (Appendix 1; also see Anderson 1898; Flower 1933). We did not meet with this species during our travels in the region. Bedouin informed us the *sayda* is found in sandy areas of Wadi at-Tarfa, Wadi Arkas, and Wadi Abu Haadh.

*Bedouin description*.—This snake is described as a small venomous viper, 100–130 mm long, with a blackish tail and a slim white to greyish body. It buries itself in the sand. We were unable to observe a *sayda* in the company of our Khushmaan companions, but the above characteristics are diagnostic of *Cerastes vipera*.

*Medicine*.—There is some variation in the type of snake used in the Khushmaan medicinal concoction to make one "strong" and to treat backache. One informant mentioned it is the *sayda*, not *hidhif* (*Echis coloratus*, see next species), that is skinned, the body dried between flat stones, crushed to a powder, mixed with a small amount of milk, and drunk. (Also see Tregenza [1958] for a detailed description of the preparation and use of this medicine.)

*hidhif*; *Echis coloratus*; Burton's carpet viper

*Distribution*.—*Echis coloratus* lives in rocky areas throughout the northern portion of the Eastern Desert (Fig. 8). Another species, *Echis pyramidum* (syn. *E. carinatus*), the saw-scaled viper, has been collected on the edge of the region (Appendix 1).



*Bedouin natural history.*—The *hidhif* favors rocky areas and is often found between cracks in stones. It occurs at high altitudes, including the summit of Gebel Shayib el Banat (2,187 m above sea-level).

*Hidhif bite.*—The venom of this snake is extremely virulent and equal to that of the *hanash*. The complete animal (skin, meat, and spittle) is regarded as poisonous. Some people are apparently immune to the snake's venom; a *hidhif* bit one Khushmaan and he survived, although the finger affected became deformed.

*Medicine.*—A dried *hidhif*, crushed, mixed with milk, and drunk makes one strong and able to walk great distances. A similar concoction, minus the head, is used to relieve backaches.

## DISCUSSION

The Khushmaan Ma'aza Bedouins of Egypt's Eastern Desert categorize nearly all reptiles as *duud*, literally "worms" but meaning essentially "crawling, non-ruminating, unclean animals." This single category incorporates what are two distinct categories in most cultures, as related by Brown (1984): "snake," including featherless, furless, elongated creatures usually lacking appendages, and "wug," small creatures other than those pertaining to "bird," "fish," and "snake" categories. In this respect, Khushmaan folk taxonomy differs from the classification scheme present in the modern standard Arabic of urban cultures in the Middle East, which differentiates "snake" and "wug" and awards each virtually the same degree of salience (Landau 1959; Brown 1984). It is also notable that while most peoples who combine these categories inhabit high latitudes where reptiles are scarce or inconspicuous (Brown 1984), the Khushmaan live in an environment where reptiles are varied, numerous, and even conspicuous.

Khushmaan classification of most reptiles as *duud* verifies Berlin's principle that ethnobiological taxonomy is based primarily on affinities which people have observed among the taxa themselves, independent of cultural significance of these taxa (Berlin 1992). There is an extremely wide range of Khushmaan cultural attributes to reptiles, and these have clearly challenged the Bedouin themselves with some important questions about their own hierarchical scheme of the natural world. Some reptiles are to be respected for their contributions to humankind: the *Uromastyx* lizard saved the Prophet Muhammad's life; the lacertid lizards hold the "keys to paradise;" and the desert monitor revealed the medicinal efficacy of a plant. Other reptiles are demonized and like the vipers are to be destroyed on sight or like the geckos to be avoided altogether. The cultural status of *Uromastyx* is so peculiar that individual Bedouins disagree on whether it deserves a special "betwixt and between" category outside of the *duud*. It is believed to ruminate and to have anatomical and behavioral likenesses to humans. Some Bedouins therefore regard it as "clean" and edible, while others emphasize that it is too humanlike to kill. Such variations in ethnobiological information are common within cultures, often varying with the gender and age of the informants (Berlin 1992); however, no particular pattern in these differences is apparent with the Khushmaan. There is consensus on the vipers: they are toxic, unclean, and not to be consumed. Yet here



again culture has created exception to its own apparent rule: prepared properly for eating, some vipers are highly effective analgesics and stimulants.

Khushmaan reptile taxonomy has a high degree of correspondence with Western scientific classification, particularly at the generic level. As has been observed in most folk classification schemes, taxa of subgeneric rank have a lower degree of correspondence with Western scientific taxonomy (Berlin 1992). There is remarkable overlap in Khushmaan and Western scientific knowledge of many of the dietary and other behaviors of desert reptiles. More striking contrasts exist between Western scientific and Khushmaan knowledge about the toxicity of these animals. The Bedouins regard as venomous several species which are not known to be by western herpetologists, notably the geckos, skinks, desert monitor, and some colubrid snakes. They recognize the saliva of these creatures as highly dangerous, and capable of inflicting sickness or death on people even by minimal contact with eating utensils. In most cases, they regard as poisonous the entire body of the creature, not merely its head, venom, or saliva.

Khushmaan ethnoherpetology thus presents its Western counterpart with opportunities and puzzles. On the one hand, as the Bedouin natural history notes in this paper reveal, the nomads have much to teach others about the distribution, habitats, habits, and life-cycles of desert wildlife. Other Khushmaan observations are more challenging. We trust the knowledge and insight of the Bedouin who, unlike us, can detect a viper hidden beneath the sand. Can we also rely on their observation that vipers eat sand, and that the animal's entire body is quite deadly? From the Bedouin point of view, it is clear that we have not spent enough time observing the animal to know that it eats sand, but why can not we see the viper buried in the sand and why do not we know that all of the animal is poisonous? Future partnerships in the field will reveal more about our cultures and the natural worlds we perceive.

#### NOTE

<sup>1</sup>The following acronyms have been used: BMNH = British Museum (Natural History), London; CAS = California Academy of Sciences, San Francisco; FMNH = Field Museum of Natural History, Chicago; MHNP = Muséum National d'Histoire Naturelle, Paris; UMMZ = University of Michigan Museum of Zoology, Ann Arbor; and USNM = United States National Museum, Washington, D.C.

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## APPENDIX 1.

Specimen records of some rare or uncommon reptiles in the northern Egyptian Eastern Desert (includes some species mentioned in main text).

## Family Gekkonidae

*Stenodactylus stenodactylus*—Wadi Hof (BMNH 1910.6.3.4); 29 km east of Cairo along Cairo-Suez Road (FMNH 82821); road to Katamiya Observatory (FMNH 152637); and Ras Gharib (BMNH 97.10.28.22).

## Family Agamidae

*Trapelus savignyi*—37 km south of halfway point along Cairo-Suez Road (FMNH 152887).

## Family Lacertidae

*Mesalina rubropunctata*—Ain Sukhna (FMNH 75566); and Ras Gharib (FMNH 78700).

*Ophisops elegans*—Wadi Araba, near Ras Zafarana (FMNH 152664-65).

## Family Scincidae

*Chalcides ocellatus*—100 km east of Cairo along Cairo-Suez Road (FMNH 72228); branch of Wadi Iseili, 24 km east Katamiya Observatory (FMNH 152716); 48 km west of Suez (FMNH 78993); Ain Sukhna (FMNH 75555); Gebel Qattar (UMMZ 177842); and Wadi el Asyuti (FMNH 152720).

*Chalcides sepsoides*—Wadi Gindali (FMNH 152642); 48 km west of Suez (FMNH 78976-78); and Ain Sukhna (FMNH 75556).

## Family Colubridae

*Coluber florulentus*—Suez (USNM 130593); and "Eastern Desert" (USNM 136426).

*Coluber rogersi*—17 km east of Cairo, near Suez Road (FMNH 75290); and Wadi el Nasuri (FMNH 69262).

*Lytorhynchus diadema*—Gebel Galala el Qibyla, mouth of Wadi Askar (UMMZ 183173).

*Malpolon moilensis*—17 km east of Cairo, near Suez Road (FMNH 75284).

*Spalerosophis diadema*—Wadi Iseili, 24 km east of Katamiya Observatory (FMNH 153050).

## Family Elapidae

*Walterinnesia aegyptia*—Gebel Suez, near Suez (FMNH 68810); Wadi el Nasuri (FMNH 72025, 72321); and about 36 km east of Cairo (FMNH 69240).

## Family Viperidae

*Cerastes vipera*—branch of Wadi Iseili, 36 km east of Katamiya Observatory (FMNH 142976); and Beni Hassan (BMNH 97.10.28.636).

*Echis carinatus*—Gebel Moqattam (BMNH 11.1.3; USNM 37339; CAS 38722).